

Original Research

An Analytical Scrutiny with Fuzzy Approach on CGMA' Business Model Ontology

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Abstract

Business model is one of the available structures of organizational management for developing competitive advantage. The purpose of this study is an analytical scrutiny with fuzzy approach on the Chartered Global Management Accountant (CGMA)' business model ontology. To study the cause-and-effect relationships and prioritize the dimensions and components of the proposed framework, fuzzy DNAP method (combination of DEMATEL and Analytic Network Process (ANP) in a fuzzy environment) has used. A pairwise questionnaire of dimensions and components dispatch among 13 experts aware of management accounting and business models issues. The experts were selected using the judgmental and purposeful sampling method. The results show that the dimensions of value delivery, value capture, value creation and value definition ranked first to fourth, respectively. The value definition dimension also has a greater impact than other dimensions and the value delivery dimension has a greater impact intensity. In the general evaluation, it was found that the component "Explaining how to use technology in presenting the created values" and the component of "Determining the value propositions" are of the highest and lowest level, respectively. According to the research findings, Management accountants, as consultants and business partners, should be on the ontology of the business model of the Chartered Global Management Accountant (CGMA) in order to provide better guidance to management, emphasis and pay more attention to priority dimensions and components.

Keywords: Management Accounting, Business Model, Ontology, Chartered Global Management Accountant (CGMA), Fuzzy DNAP.

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Introduction

With the expansion of human societies and the emergence of new commercial markets, companies have always had to adapt to environmental changes to survive. New organizations are becoming more complex because of the rapid changes and the highly competitive environment (Kumar Dahal, 2019; Abrahamsson et al., 2019). Globalization, economic liberalization, technological advances, and factors interrelation have made the nature and existence of organizations more rigid and complex than before (Huyett & Viguerie, 2005; Franczak, 2018; Endenich et al., 2017). These changes have created new risks and opportunities for companies. The managers need a broader information system to overcome these threats and take advantage of new opportunities to provide relevant and reliable Information (Alizadeh Aghdam & Soleimani Amiri, 2020; Wickramasing & Alawataj, 2018). Markets have become more international, more dynamic and more customer-oriented. Customers demand more diverse and higher quality products and services with the two characteristics of reliability and fast and on-time delivery. The ecological changes of business units show that there is always an emphasis on accurate, reliable, transparent, complete and timely information and statistics (Kumar Dahal, 2019). In the first step, managers need accounting information as an essential decision-making tool to determine how to allocate resources and control them and ensure to use of effective and efficient resources (Sayadi Somar et al., 2020; Sayadi-Sumar & Sabz Alipour, 2021). Accordingly, organizations try to use new techniques and innovations in their management accounting because of crucial issues such as sustainability, value creation and sustainable competitive advantage (Yadav et al., 2013). Conducted experimental studies on the used tools by companies to achieve these issues show that the use of management accounting tools in this field has a growing trend (Epstein & Buhavac, 2010; Mokhtar et al., 2016; Crutzen et al., 2017; Wolf et al., 2020).

Management accounting is the essential component of a management information system that should provide information properly with considering some issues such as market developments, society's economy, culture, and financial resources of the company (Sayadi-Sumar & Sabz Alipour, 2021). However, because of the new business environment, current management accounting has lost its relevance (Kaplan and Johnson, 1987), and its situation is not convincing (Rezapour, 2014). Continuous changes in the business environment due to globalization (Sulaiman et al., 2008), intensely competitive environment (Kariyawasam, 2009), changes in supplying the products and services and presenting them to the customers (Cinquini & Tenucci, 2009), advances in information technology (Talha et al., 2010; Tuanmat & Smith, 2011), and some changes in the rules and regulations (Loo et al., 2011) have affected management accounting practices and organizational activities and will continue to do so (Kumar Dahal, 2019). In addition, advances in product manufacturing technologies, including product line technologies and computer-driven designs, have significantly affected corporate management accounting systems (Cooper & Dart, 2009). Thus, management accounting has not moved with the current needs of companies and the realization of new criteria for their success (Endenich et al., 2017).

Drastic changes have taken place in management accounting over the past decade (Gaffikin, 2009; Shotter, 2001). The emergence of management accounting practices such as the Balanced Scorecard, activity-based costing and life-cycle costing can be

considered contemporary practices (Adler et al., 2000; et al., 2012). At the beginning of the twentieth century, management accounting was regarded as an information tool that aimed to provide information and details about the short-term value of the business and short-term value creation (Friedman, 1970). In the late twentieth century, the companies examined the role of macro factors and their impact on businesses (Berry et al., 2009; Cordery, 2013; Scapens, 2006) and introduced their management accountants as business consultants (Rajeevan, 2019), and this issue encouraged management accountants to make better decisions that would have benefits for the entire society (Sharma et al., 2014; Cokins, 2016). Nowadays, accounting firms focus on providing Information for sustainable business practices, stakeholder management, and integrated reporting (Skepnes, 2006; Sharma, Lawrence, and Lowe, 2010; Tan, Fowler, and Hawkes, 2004; Franczak, 2018). Significant advances in management accounting have led researchers to put more studies on the agenda for understanding the time and process of procedures in the organizations (Ratnatunga et al., 2015). In the meantime, the business model concept is one of the essential issues that has attracted the academic community and international business stakeholders (Zott et al., 2011; Bini et al., 2018; Di Fabio, & Avallone, 2018; Roslender & Nielsen, 2018). Researchers and executives are trying to provide a complete research on what this concept is, how it works, and how it reflects on financial statements (Lassini et al., 2016; Bini et al., 2018). By reviewing the literature on the idea of business model, we find that various definitions have been proposed for business models (Hamel, 2000; Stewart & Zhao, 2000; Amit & Zott, 2001; Rappa, 2001; Weil & Vitell, 2001; Magretta, 2000; Osterwalder & Pigneur, 2002; Morris, Schindehutte & Allen, 2005 and 2006; Tecce, 2010; Zott et al., 2011; Novak, 2013). Despite their vast knowledge of the concept, researchers have not yet reached a general consensus on what it is and how it relates to the business unit strategy (Richardson, 2008; Tecce, 2010; Zott et al., 2011; Novak, 2013; Di Fabio & Avallone, 2018). Much research has been conducted to examine the ability of financial reporting on disclosure of useful Information about business models of business units (Giunta et al., 2009; ICAEW, 2010; Singleton-Green, 2010; Leisenring et al., 2012; Thornton, 2012; CIMA, 2013; IIRC, 2013; Page, 2014; Singleton-Green, 2014; Lassini et al., 2016). Focusing on long-term success and creating value for all stakeholders instead of making short-term profits can support companies in the maze of the business environment. Accordingly, the Association of Certified Management Accountants (2016) proposed its business model. Then, the Chartered Global Management Accountant (CGMA) introduced the value-based business model framework of the Association of Certified Management Accountants in large-scale research to empower management accountants in the position of business partners to achieve long-term organizational success. New markets, new opportunities, new discoveries and increasing levels of competition have accelerated the innovation of business models. Therefore, many business units are committed themselves to update the concept of business models and discovering different strategies to improve their ability to create and capture value (Giesen et al., 2007; IBM Global CEO's Study, 2008; et al., 2010; Tecce, 2001; George & Bock, 2011). It seems necessary for management accounting to keep pace with changes and not fall behind. Sufficient awareness and flexibility for the progress and focus on the ways of achieving long-term success are some of the particular areas that need attention in business models (Global Association of Certified Management Accountants, 2015). The main question that will be raised in this research is: "what kind of relationship is between the dimensions and components of the proposed business model framework of the Chartered Global Management Accountant

(CGMA) and what their level of importance is?" This study aims to analyze and examine the dimensions and components of the proposed business model with a fuzzy approach and determine the relationships between their effectiveness and implacability and provide a clear prioritization of them. This can increase accountants' efficiency and effectiveness of the proposed model framework usage, especially high-efficiency management accountants.

Literature review

The role of management accountants in business development

Many studies have discussed the nature and role of management accounting (Byrne & Pierce, 2007; Ten Rouwelaar & Bots, 2008). Preliminary studies also show that the role of management accountants has expanded and shifted from small-mindedness and attention to low-value issues to business consultants and advocates so that they have a supportive part of middle management in the organization. (Burns & Baldvinsdottir, 2005; Caglio, 2003; Jablonsky & Barsky, 2000). It should be mentioned that there is some evidence to suggest that the critical approach to management accounting has not disappeared, and one of its most important functions is to provide services to small companies (Albu et al., 2008; Verstegen et al., 2007; Zoni & Merchant, 2007). In multinational organizations, it is common to employ human resources and professionals with special skills to manage organizational management control systems (Rajivan, 2019). These individuals are generally referred to as controllers, financial managers, and management accountants who play an essential and influential role in the organizations by revealing their capabilities and power (Ezzamel & Burns, 2005; Granlund & Lukka, 1998; Lambert & Sponem, 2005). Under various circumstances, management accountants try to change their roles in a certain way to form a new set of responsibilities (Morales & Lambert, 2013). Milton & Platt (2011) believe that management accountants are strategic partners of local and international businesses that work in groups with other people (Hilton & Platt, 2011). The primary purpose of management accounting in organizations is to help management improve and develop the processes of collecting, processing and linking processed information (Rajivan, 2019). A review of studies shows that various macro factors have influenced the role of management accountants. Introduction of new technologies (Emsley, 2005; Friedman & Lyne, 2001) and information technology (Caglio, 2003; Dechow & Mouritsen, 2005; Jack & Kholeif, 2008; Scapens & Jazayeri, 2003) has had a significant impact on the performance and accounting role of management (Rajivan, 2019).

It should be mentioned that the turbulent and uncertain business environment has caused the fast and in moment changes of stakeholders' demand and expectations (Pierce & Odea, 2003). Therefore, the responsibility of management accountants to collect and report the Information is enhanced to the management interpretation and advice (Granlund & Lukka, 1998). Nowadays, decision-making (Johnston et al., 2002) and participation in organizational strategy formulation (Tillmann & Goddard, 2008; Yi & Tayles, 2009) are facilitated by management accountants. In the Global Principles of Management Accounting (Association of International Certified Professional Accountants (AICPA) and Chartered Institute of Management Accountants (CIMA), 2014), management accounting is defined as the resource identification, analysis,

communication, and use of financial and non-financial information to create and maintain organizational values. Thus, if the value is at the heart of an organization's business models, management accounting can be helpful in designing, implementing, and reporting the business model (Chartered Global Management Accountant (CGMA), 2016).

Frameworks and ontology of business models

Nowadays, business models have become an integral part of organizations' business and economic behavior, and they are frequently used by different sectorial systems, as their application in management and business practices has become commonplace (Perić, Vitezić & Durkin, 2017). Organizations are focused on business models to achieve higher profitability and competitive advantage (Bucherer & Uckelmann, 2011). Anyone talking about a business model associates it with terms such as business unit strategy, competitive advantage, e-commerce, innovation, or business unit performance. An organization that is established on a reliable and rational business model (Magarta, 2002) and its design of the business model has the aim of achieving long-term entrepreneurial performance and success (Zott & Amit, 2007; Kesting & Gunzel-Jensen, 2015) considers the continuous scientific research on the concept and elements of the business model necessary. Also, the improvement and development of the theoretical framework and the creation of risky investments will become twice important (Perić et al., 2017).

Some researchers, including Tecce (2010) and Khanagha et al., (2014) and Athanasopoulou & De Reuver (2020), describe the business model as an explanation for the way users and stakeholders value a business unit. Others acknowledge that the business model is a critical factor in success or failure (Weill et al., 2005). KPMG institute (2014) believes that any description of the term business model should include such things as what is the structure of the organization, the definition of target markets, the operation method of the organization in target markets, main products and services, leading group of customers and fundamental forms of goods and services distribution (KPMG, 2014, citing the Chartered Global Management Accountant (CGMA)). Although many researchers believe that the term model is used only to simplify the concept of business (Codrea-Rado, 2013), some view it as a slogan (Seppänen & Mäkinen, 2005), and some also consider it a frequent but lesser-known term (Rapa, 2010).

Culture and inter-organizational and global competitive pressures play an essential role in the designed or designed business models. Understanding the business model can enable managers to use the company's cultures and subcultures and align them with its goals and vision. Understanding competitors' business models can provide a helpful perspective for identifying the organization's position in the market (Chartered Global Management Accountant (CGMA), 2018). When business models are combined with design, analytics, and innovation, they can create benefits for business units and improve or enhance their business networks (Bock & George, 2014). Organizations need to visualize their business models before taking any action fully. This understanding is essential for strategic success (Chartered Global Management Accountant (CGMA), 2016). Over the past 15 years, many researchers in various disciplines (management, economics, and accounting) have sought to discover better the hidden nature and identity of business models (Chen, 2003; Lam & Harrison-Walker, 2003; Seelos & Mair, 2005;

Chesbrough, 2007; Johnson et al., 2008; Zott et al., 2011; Arend, 2013; Klang et al., 2014; Zandoval Bonazzi & Ziber, 2014). Academics and practitioners are trying to get a better picture of the concept by putting together pieces of the business puzzle. The tools for describing, expressing and conveying business models in theoretical and practical dimensions are growing rapidly (Szopinski et al., 2019). These tools facilitate the exchange of ideas of business models between stakeholders (Bouwman et al., 2018). Identifying the elements of the business model and the relationships between them is an attempt to explain the more practical abstract idea, and therefore in recent years, significant efforts have been made to define these elements (Hedman & Kalling, 2003; Johnson et al., 2008; Richardson, 2008; Osterwalder & Pigneur 2010; Zott & Amit, 2010; Arend, 2012; Matzler et al., 2013; Bocken et al., 2014; Roome & Louche, 2016). In addition, extensive efforts have been made to review the existing literature to propose elements of a new business model, or to validate previous aspects, or to classify them into logical groups and categories (examples include: Shafer et al., 2005; Morris et al., 2005; Ghaziani & Ventresca, 2005; Zott et al., 2011; Onetti et al., 2012; Klang et al., 2014; Wirtz et al., 2016). There are reasons why organizations try to innovate business models by making changes to the structure of their business models; The poor performance of the company, innovative use of (internal) resources, the introduction of new services to the market (external) and introduction of new ideas can be mentioned among these reasons (Athanasopoulou & De Reuver, 2020).

In the business model literature, the idea that business components represent the exact form of the business model concept has not been realized so far (Lucassen et al., 2012; Gassmann et al., 2014). Over the past two decades, several frameworks have been designed for business models, all of which differ in some respects and components, and some are common to each other (Aarntzen, 2016). One of the essential similarities in the framework of business models is that all the frameworks and their constituent elements show how the business unit or organization deals with creating and capturing value (Fielt, 2014). Fielt (2014) believes that by examining the performance of business model frameworks, we can understand what and how business models work. The business model of business units consists of several elements (Hedman & Kalling, 2003; Hamel, 2000), component (Pateli & Giaglis, 2004), question (Morris et al., 2005), built-in blocks (Osterwalder & Pigneur, 2010) or Function (Chesbrough & Rosenbloom, 2002).

Designing a capable business model is vital for the success of plans and projects (Troman et al., 2007; Rasouli et al., 2020). Developing such a business model at the operational level requires a proper ontology. To create this functional ontology, it is necessary to identify the critical components of the business model. Hamel (2001) defines the essential components of a business model as the components that make up the concept of a business model (Hamel, 2001). The various components of a business model can conceptualize and simplify the logic of a particular business (Stewart & Zhao, 2000).

The formal definition of ontology is the description of concepts (Peim, Franconi, Paton, & Goble, 2001). Most ontologies consist of concepts that represent natural objects in the world; relationships define these concepts and, by connecting, show how these concepts relate (Hsu, 2000). Ontology is the agreement on frameworks that interpret, explain, and link concepts in each domain. Hence, ontology expresses knowledge, processes, business motivations, business strategies, business unit structures, and

business models (Chungyalpa et al., 2016). Fensel (2001) argues that ontology is nothing more than a coherently defined framework that provides a familiar and appropriate understanding of concepts and can make connections between advanced and heterogeneous applications and systems (Fensel, 2001). Osterwalder & Pigneur (2002) argue that ontology essentially leads to a common understanding in a particular field or domain by defining elements and their relationship (Osterwalder & Pigneur, 2002). But the more comprehensive definition is that ontology is derived from the two words onto meaning existence, and Logia means to study and has ontological meaning in general (Bavakhani, 2015). The main constituent elements of ontology are concepts, communication and characteristics (Rasouli, Solaimani, & Alipour-Hafezi., 2020).

Studies show that researchers in the business model field have focused on three levels of the business model: ontology, typology, and the natural world (Osterwalder et al., 2005). At the highest level of the business model, ontology includes the various critical components of a business, the relationships between them, and the definitions. The ontologies of business models represent the elements and the relationships between these elements (Gordijn et al., 2005) and their hierarchical structure (Fielt, 2014). Typology includes different types of Metamodels of business. The real world of business modelling is where a business model in practice conceptualizes, visualizes, and describes a particular business. However, current ontologies have some limitations (Rasouli et al., 2020). The general findings and suggestions about business models are not solid and logical and imply various elements of the business model, partial models and superficial interpretations. (Perić et al., 2017). Therefore, such a degree of complexity in this area will undoubtedly require further research.

In the management literature, the business model (BMC) ontology attributed to Osterwalder & Pigneur (2010) has attracted a great deal of attention among those involved in the field of performance. Many academic researchers have used this model or its modified model as a conceptual framework in their research (e.g. Zolnowski & Böhmman, 2013; Faganel et al., 2016; Kajanus et al., 2014; Mosleh et al., 2015). Osterwalder & Pigneur (2010) focused on how the business model should be designed to support the management decision-making process. Therefore, they proposed a business model (BMC) (Osterwalder & Pigneur, 2010). This tool has nine components or structures, including customer segments, customer relationships, value proposition, communication channels, key activities, essential resources, key partners, cost structure and revenue streams. The presentation of the graphic image is reflected. As stated by Faganel, Biloslavo & Janeš (2016), using the business model board (canvas) facilitates the evaluation of the current business model. It can be found what the capacities and potentials of the current business model and the next steps. What are suitable models for further improvement and development (Faganel et al., 2016).

In the financial accounting literature, the International Council on Integrated Reporting on Business Model Ontology has identified four main components for the business model, including inputs, key activities, outputs, and achievements (International Integrated Reporting Council (IIRC), 2013). Experts in the management accounting profession, including the Chartered Global Management Accountant (CGMA), believe that most current business model frameworks are far from comprehensive and, in particular, do not support management accounting. This was why the Association has been designing a

business model framework based on extensive academic research over the past two decades. The Association's comprehensive research suggests that businesses need to develop a fuller understanding and definition of their business models with greater transparency. Therefore, the proposed framework helps achieve these goals and provides a stronger sense of how value creation and sharing of value are created among stakeholders (Chartered Global Management Accountant (CGMA), 2016 & 2018).

Instead of presenting a general model, the Association focused its framework on value creation for a wide range of stakeholders and the role of management accountants in value creation. The Association believes that the business model framework should focus not only on value creation but also on how value is presented and delivered (Magreta, 2002), value capture (Baden-Fuller et al., 2008) and decisions that approved Include value creation (Girota & Netessine, 2015). This tool includes the necessary performance and strategic metrics for long-term and vital success organizations. The main benefit of the Association's business model framework is that it will enable the organization to define, create, deliver (deliver) and capture value to its key stakeholders:

Defining Value: A critical factor in determining value is customers, investors, and other stakeholders who represent value based on their wants and needs. Using this framework, the organization can identify all its stakeholders, identify their needs, and create solutions to meet their needs (financial, social, natural, or intellectual).

Value Creation: Based on the proposed definition of value, the organization can take control of critical resources and their relationship to create products, services, and experiences expected of the organization's stakeholders.

Value Delivery: Based on the value created, appropriate outputs such as revenue, security, satisfaction, loyalty, etc., will be provided to the skilled and expert stakeholders. Organizations need to segment customers and understand the communication channels to serve them to deliver value.

Value capture: In the private sector, value is captured when the engineered revenues in the value cycle outweigh the costs. In the public sector, discounts will be caught depending on whether the benefits realized through service delivery outweigh the delivery costs (Chartered Global Management Accountant (CGMA), 2018 & 2016).

Analysis of different approaches to the business model components shows a somewhat heterogeneous understanding in the business model literature (Noor Alizadeh et al., 2015). Evaluating and analyzing business models is a research that has a long history in the literature. Some of them are considered here. In Müller & Hundahl's (2020)'s study, Osterwalder's business model is used as an analytical framework to answer questions about the innovation of IT-based business models, and three sources of innovation are identified, including customers, infrastructure and supply chain. Morkunas et al., (2019) also investigated the impact of each of the block-chains technologies on each element of the business model using the Osterwalder business model. Jasper & Nielsen's (2018) research showed that the business model canvas reduces the challenges between entrepreneurs and business supporters. Also, in the study of Alexandre & Raymond (2016), three layers were introduced for the environmental and social business model,

which showed how an organization presents different types of values. Gholamreza Zadeh, Fadaei et al., (2015) compared the business models of the insurance industry based on the ontology of the Osterwalder business model.

Their research showed that the financial structures and products of public insurance A and private B are different, the main reasons being government A, insurance A, branches and agencies, brand A popularity and conservative strategy. Insurance B is assessed. by comparing the e-banking business model of Iranian banks with the comprehensive banking model Arsanjani & Taleghani (2017) found that the dimensions of the e-banking business model in Iran with the complete banking model in five dimensions of nine dimensions of the Osterwalder and Pigneur business model are different. The Association of Certified Public Accountants, International Federation of Accountants, PricewaterhouseCoopers Institute, evaluated the disclosure of business models and concluded that the current reporting of inconsistent business models is incomparable and incomplete (Lassini, Lionzo & Rossignoli, 2016). Melloni, Stacchezzini & Alessandro (2016) analyzed 54 examples of business model disclosure in integrated reports and concluded that most of the information disclosed about the business model in these reports has a positive tone, and a characteristic that accompanies this positive tone are those that can be signs of tampering. In 2010, the British Financial Reporting Council included business model disclosure in the UK corporate governance charter, required for companies listed on the London Stock Exchange. The elements of the business model are not identified in this report. Ittner & Larcker (2003) acknowledged that empirical studies show that businesses that have reviewed and adapted their business models to management accounting plans are more likely than other companies to Have higher returns on assets. Beyer et al., (2010) believes that management accounting experts should evaluate the business unit's profitability, match the degree of profitability with the expected profit, and provide their advisory views to management for possible improvements. The results of Michalak (2012) showed that the business model has a fundamental role in the computational methods used in management accounting. If the business model is chosen incorrectly and inappropriate methods are used, it leads to misleading information. Finally, it leads to wrong management decisions.

Table 1 lists some of the frameworks and ontologies of the business model and their components that some researchers have proposed.

Table (1): Frameworks and ontologies of the business model

References	Components
Chesbrough & Rosenbloom (2002).	Value Proposition, Target Markets, Internal Value Chain Structure, Cost Structure and Profit Model, Value Network and Competitive Strategy
Afuah & Tucci (2003)	Customer Value, Price, Revenue, Related Activities Capabilities
Morris et al., (2005)	Product Offer, Market Factors, Internal Capacity Factors, Competitive Strategy Factors, Economic Factors and Growth Factors, Failure

References	Components
Chesbrough (2007)	Value Proposition, Target Markets, Value Chain, Revenue Mechanism, Value Network or Ecosystems and Competitive Strategy
Kujala et al (2013)	Customer, Value Proposition for the Customer, Competitive Strategy, Position in the Value Network, Key Capabilities, Internal Supplier Organization and Revenue Generation Logic
Osterwalder & Pigneur (2010)	Customer Segments, Customer Relationships, Suggested Value, Communication Routes, Key Activities, Key Resources, Key Partners, Cost Structure, and Revenue Flows
Zott & Amit (2010)	Design Elements (Content of Activity System, Structure and Governance) and Design Forms (Practical, Package, Supplements and Effectiveness)
Demil & Lecocq (2010)	RCOV Model for Resources, Competencies, Organization, Value Proposition
Arend (2013)	Values, Resources, Capabilities, Partners (as in Dependent Networks), Structures (such as Governance Choices), and Economic Power
Matzler et al., (2013)	Location (Customer Needs), Production and Service Logic, Value Creation Architecture (Core Competencies, Core Processes), Sales and Marketing Logic, and Profit Formula (Revenue Model and Cost Model)
International Integrated Reporting Council (IIRC) (2013).	Inputs, key Activities, Outputs and Outcomes
Gassmann et al., (2014)	-What do you offer to customers (who are the customers, how they make money (financial aspect) -Define values (what is the product or service). -How value proposition is generated and distributed.
Weiweia & yue (2015)	The company itself, Consumers, Corporate Stores, Customers, Suppliers, Advertising, Employees
Nambisan (2016)	Open Information, Discover new opportunities, Digital Structures, Computing, Social Media, Digital Products and Services
Wirtz & Daiser (2017)	Competition, Innovation, Change, Evolution, Design, Strategy, Market, Customer and Value Creation
Landau et al., (2016)	Seasons, Value Creation, Risk, Income and Communication
Bankvall et al., (2016)	Company Business Model, Networked Business Model, Interaction, Communication, Information Technology, Existing Partners, New Partners, New Methods
Wirtz & Daiser (2017)	Customers, Technology, Direct Business Infrastructure, Profitability
Kawaf & Tagg (2017)	Website Design, Website Quality and Website Space, Consequences of a Favorable Website

References	Components
Chartered Global Management Accountant (CGMA) (2018)	Define Value, Value Creation, Value Delivery and Value Capture

Research questions

In the present study, two fundamental questions have been raised as follows:

Question 1: What are the cause and effect relationships of the dimensions and components of the business model proposed by globally certified management accountants?

Question 2: What are the priorities and importance of the dimensions and components of the proposed business model of global certified public accountants?

Methodology

The present study is applied in terms of the result of the implementation and the used paradigm; positivism has a rationalist approach because the goal of the research is to find the answer to a problem whose outcome can play a role in, so it is decision-making. From the point of view of inductive executive logic (reasoning method), from the point of view of temporal, cross-sectional dimension and in terms of the nature of data and methods of analysis; It is of descriptive-survey type. The study's statistical population includes university professors and executive specialists (auditors, stockbrokers and managers) familiar with management accounting concepts and business models.

In this study, to analyze and review the business model framework of globally certified management accountants from the multi-criteria decision analysis approach and using the fuzzy network analysis process model along with the fuzzy-DEMATEL technique and from the famous framework called Fuzzy-DNAP (Hsu et al., 2012) and using a pairwise comparison questionnaire and using the opinions of selected experts and experts. To compare the criteria with each other, five verbal expressions and their equivalent fuzzy values have been used according to Table 2.

Table (2): Five Degrees of DNAP technique and fuzzy values for verbal expressions

No Effect	Low Effect	Medium Effect	High Effect	Very High Effect
(0, 0, 0.25)	(0, 0.25, 0.5)	(0.25, 0.5, 0.75)	(0.5, 0.75, 1)	(0.75, 1, 1)

Jassbi et al., (2011)

The DNAP framework is a tool for mapping the visual effects network relationships between DEMATEL dimensions and criteria (Chiu et al., 2013) to evaluate critical components by examining practical and prioritized weights based on the DEMATEL effective matrix (Ou Yang et al., 2007; Tsui et al., 2015). The fuzzy DNAP technique uses fuzzy linguistic variables to facilitate decision-making in conditions of

environmental uncertainty. Examining the literature on multi-criteria analysis and decision-making tools, we find that the use of these techniques to solve real-world problems has been increasingly on the agenda (Yang & Tzeng, 2011). Among the methods of analysis and multi-criteria decision making, some methods such as Victor and TOPSIS are based on cumulative function. Some methods also include the hierarchical analysis process, network analysis process, DEMATEL and DNAP (DEMATEL based on network analysis process) to determine and evaluate criteria and decision structures focused on the preferred weights of decision-makers (focused) (Chen & Lin, 2017). In the decision-making process, measuring the importance of criteria and structures is very important to improve decision-making quality (Yang & Tzeng, 2011).

All in all, first: the DNAP method, the DEMATEL technique was used for Influential Network Relation Map (INRM) (Chen et al., 2010; Chiu et al., 2013; Tsui et al., 2015; Tzeng et al., 2007) and the effect matrix of all criteria and dimensions. Second, DEMATEL, based on the network analysis process, does not require a purely hierarchical structure (Chen et al., 2010). This method uses the basic concept of the network analysis process to determine the prioritized weights resulting from DEMATEL results and to promote the normalization process in the network analysis process (Chiu et al., 2013).

Because the purpose of generalizing the results was not raised, the judgmental and purposeful sampling method was used to select the experts' team. Criteria for selecting experts are theoretical mastery, practical experience, willingness and ability to participate in research and access. By considering these criteria and finally, the number of experts with whose cooperation the research process was conducted eventually reached 15 people. A pairwise comparison questionnaire was sent to 15 experts, but 13 individuals completed their questionnaires, and these questionnaires became the basis for data calculation and analysis. Based on the available studies, the identification and selection of specialists were made using various methods such as judgment and decision-making of the leading project management, organizational position of individuals and review of authors (Fraser, 1999; Okoli & Pawlowski, 2004).

To select a group of experts from executives, we benefited from auditors and stock exchange specialists whose field of study is financial accounting and management accounting and experienced professors in the field of financial accounting and management accounting who are experts in accounting and business management. For this purpose, the number of scientific-research articles or teaching in this field and good executive work experience, for example, employment in managerial or supervisory positions, are considered. Members of the experts' research group are 13 experienced members of the university who have records of faculty members in universities, Membership in associations and specialized committees of accounting and finance, experience in auditing, Membership in the board of directors of companies, Membership in the auditing organization, supervising dissertations and submitting numerous articles in their academic record.

If you look at pairwise comparisons, you will find that these comparisons are not statistical questionnaires; instead, it is just a mathematical matrix in which variables are compared in pairs (Mohammadi lord, 2009). Therefore, the variable is not measured by metrics that want to check the accuracy of this measure, so pairwise comparisons are just

a mathematical matrix and do not mean a statistical questionnaire. Therefore, since it is not a questionnaire, validity and reliability do not make sense for the pairwise comparison matrix. Only the incompatibility rate is used to measure the rationality of pairwise comparisons. If the incompatibility rate is less than 0.1, logical and correct comparisons have been made. After answering the pairwise comparisons, the rate of incompatibility of the tables was calculated, all of which were less than 0.1, indicating that the pairwise comparisons' stability and reliability are acceptable. Considering that the subject experts have approved the pairwise comparison questionnaire, its validity is also confirmed. Since only the opinion of experts is needed in research, and the importance of choosing this statistical population is that the subject is in the expertise of experts, the study of demographic variables did not help advance the research (Salarzahi & Dejkam, 2012) and therefore it is omitted.

Method of data analysis

The method of data analysis in this study is a multi-criteria decision-making method that, according to the research conditions, a fuzzy DEMATEL based ANP method was used. In this method, using the fuzzy DEMATEL matrix of components, the super-matrix of the fuzzy network analysis process is formed. Finally, the weight of the dimensions and features is obtained.

Fuzzy DNAP method

The DNAP technique is a new approach combining the two DEMATEL methods with the network analysis process (Yang et al., 2008). This approach is a suitable method to solve problems with dependent criteria or feedback (Chiu et al., 2013) that uses the total communication matrix of DEMATEL to form the matrices of the network analysis process and to calculate the cause-and-effect relationships and interrelationships between The criteria and dimensions of the problem by the DEMATEL method and then the effective weight of the requirements and dimensions is computed using the concept of the network analysis process. The steps of this method are given below (Hu et al., 2014; Chen & Lin, 2017; Tsui et al., 2015; Chen et al., 2010; Chiu et al., 2013; Yang et al., 2008; Tzeng et al., 2007; Tzeng & Wang, 2012; Tzeng & Huang, 2011).

Direct Impact Matrix: In the first step, respondents were asked to indicate the effect of criterion i on criterion j using verbal expressions and their equivalent fuzzy values. To take into account the opinion of all experts according to Equation (1), an arithmetic mean is taken from them.

$$\text{Equation (1)} \quad \tilde{z} = \frac{\tilde{x}^1 \oplus \tilde{x}^2 \oplus \tilde{x}^3 \oplus \dots \oplus \tilde{x}^p}{p}$$

In this formula, p is the number of experts and $\tilde{X}^p; \tilde{X}^2; \tilde{X}^1$ are the matrix comparison pairs of expert 1, expert 2 and expert p, respectively, and \tilde{z} is a triangular fuzzy number as $\tilde{z}_{ij} = (l'_{ij}; m'_{ij}; u'_{ij})$. According to Equation (1), we normalize the mean of the first step matrix and call it the H matrix. Matrix Normalization Primary Impact: To normalize the resulting matrix, Equations (2) and (3) are used:

$$\text{Equation (2)} \quad \tilde{H}_{ij} = \frac{\tilde{z}_{ij}}{r} = \left(\frac{l'_{ij}}{r}; \frac{m'_{ij}}{r}; \frac{u'_{ij}}{r} \right) = (l''_{ij}; m''_{ij}; u''_{ij})$$

r is obtained from the following equation:

$$\text{Equation (3)} \quad r = \max_{1 \leq i \leq n} \left(\sum_{j=1}^n u'_{ij}; \sum_{i=1}^n u'_{ij} \right)$$

Fuzzy total relations matrix: After calculating the above matrices, the total fuzzy relations matrix with respect to relations (4) to (7) is obtained:

$$\text{Equation (4)} \quad T = \lim_{k \rightarrow +\infty} (\tilde{H}^1 \oplus \tilde{H}^2 \oplus \dots \oplus \tilde{H}^k)$$

Where each element of the fuzzy number will be like $\tilde{t}_{ij} = (l^t_{ij}; m^t_{ij}; u^t_{ij})$ and it will be calculated as follow:

$$\text{Equation (5)} \quad [l^t_{ij}] = H_l \times (I - H_l)^{-1}$$

$$\text{Equation (6)} \quad [m^t_{ij}] = H_m \times (I - H_m)^{-1}$$

$$\text{Equation (7)} \quad [u^t_{ij}] = H_u \times (I - H_u)^{-1}$$

In this relation, I is a single matrix and H_l ; H_m and H_u are each $n \times n$ matrices whose constituents are the lower number, the middle number, and the upper number of the triangular fuzzy numbers of the H matrix, respectively.

Full dimensional correlation matrix: In the next step, the full dimensional correlation matrix (T_D) must be extracted from the full correlation matrix (T_C). Therefore, each state of the T_D matrix is calculated as follows: If we know every state of the T_D matrix, every t''_{ij} is obtained from the mean of every T_C^{ij} .

Impact intensity index and impact direction and effect direction: Then we calculate the r_i and c_j index according to equations (8) and (9). The r_i index represents the sum of the i th row and the c_j index represents the sum of the j th column of the T_C matrix with respect to the corresponding dimension. Similarly, we calculate the values of the index \tilde{R} and \tilde{D} . The R_i index represents the sum of the i th row and the C_j index represents the sum of the j th column of the T_D matrix. To draw and analyze the chart, we need two indicators of impact intensity and effectiveness and direction of impact, which are obtained using r_i and c_j . For each $i = j$ we will have:

$$\text{Equation (8)} \quad \tilde{D} = (\tilde{D}_i)_{n \times 1} = \left[\sum_{j=1}^n \tilde{T}_{ij} \right]_{n \times 1}$$

Equation (9)

$$\tilde{R} = (\tilde{R}_i)_{1 \times n} = \left[\sum_{j=1}^n \tilde{T}_{ij} \right]_{1 \times n}$$

Where \tilde{D} and \tilde{R} are $n \times 1$ and $1 \times n$. The next step is to determine the importance of the indicators $\tilde{D}_i + \tilde{R}_i$ and the relationship between the criteria $\tilde{D}_i - \tilde{R}_i$. The higher the value of $\tilde{D}_i + \tilde{R}_i$, the more important that criterion is. Also, the more positive the value $\tilde{D}_i - \tilde{R}_i$, the stronger a penetrant is cut, and the more negative it is, the stronger a permeable. According to the values calculated above, the values of the index $\tilde{D}_i + \tilde{R}_i$ and $\tilde{D}_i - \tilde{R}_i$ are obtained to investigate the desired dimensions and components and then defuzzy using Equation (10). :

Equation (10)

$$\text{defuzzy} = \frac{((u - l) + (m - l))}{3} + l$$

Influential Network Relation Map (INRM): To determine the network map of the relationships effect, the threshold value must be calculated. In this way, partial relationships can be omitted and a network of significant relationships can be drawn. The only relationships with values in the T_C and T_D matrices are greater than the threshold value will be displayed in the network effect relationship map. To calculate the value of the relationship threshold, it is sufficient to calculate the average values of each T_C^{ij} (in the T_C matrix) as well as the average values of the T_D matrix (to map the dimension relationships). After determining the threshold intensity, all values that are smaller than the threshold are zero, which means that a causal relationship is not considered. For this purpose, the complete relationship matrix of dimensions and criteria is decapitated using Equation (10).

Normalization of full relational dimension matrix T_D^α : According to Equation (11), we proceed to normalize the T_D matrix by calculating the sum of each row of the T_D matrix according to the relevant dimension, then the element of each row divide by the sum of the elements of the same row and finally replace the row and column.

Equation (11)

$$T_D = \begin{bmatrix} t_{11}^{D_{11}} & \dots & t_{1j}^{D_{1j}} & \dots & t_{1m}^{D_{1m}} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{i1}^{D_{i1}} & \dots & t_{ij}^{D_{ij}} & \dots & t_{im}^{D_{im}} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{m1}^{D_{m1}} & \dots & t_{mj}^{D_{mj}} & \dots & t_{mm}^{D_{mm}} \end{bmatrix} \begin{matrix} \longrightarrow d_1 = \sum_{j=1}^m t_{1j}^{D_{1j}} \\ \longrightarrow d_i = \sum_{j=1}^m t_{ij}^{D_{ij}}, d_i = \sum_{j=1}^m t_{ij}^{D_{ij}}, i = 1, \dots, m \\ \longrightarrow d_m = \sum_{j=1}^m t_{mj}^{D_{mj}} \end{matrix}$$

$$T_D^\alpha = \begin{bmatrix} t_{11}^{D_{11}} / d_1 & \dots & t_{1j}^{D_{1j}} / d_1 & \dots & t_{1m}^{D_{1m}} / d_1 \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{i1}^{D_{i1}} / d_i & \dots & t_{ij}^{D_{ij}} / d_i & \dots & t_{im}^{D_{im}} / d_i \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{m1}^{D_{m1}} / d_m & \dots & t_{mj}^{D_{mj}} / d_m & \dots & t_{mm}^{D_{mm}} / d_m \end{bmatrix} = \begin{bmatrix} t_d^{\alpha 11} & \dots & t_d^{\alpha 1j} & \dots & t_d^{\alpha 1n} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_d^{\alpha i1} & \dots & t_d^{\alpha ij} & \dots & t_d^{\alpha in} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_d^{\alpha n1} & \dots & t_d^{\alpha nj} & \dots & t_d^{\alpha nn} \end{bmatrix}$$

Normalization of the component relationship matrix T_D^α and formation of an unbalanced super-matrix: We normalize the T_c matrix using Equations (12) and (13); In this step, the sum of each row T_c^{ij} is calculated according to the relevant dimension and then in each T_c^{ij} , each element is divided by the sum of the elements of the corresponding row. For example, if we consider every T_c^α containing a set of $T_c^{\alpha ij}$, $T_c^{\alpha 11}$ is obtained from the normalization of T_c^{11} . By transposing the matrix T_c^{11} , an unbalanced super-matrix is obtained.

Equations (12)

$$T_C^\alpha = \begin{matrix} & \begin{matrix} D_1 & D_j & \dots & D_n \\ c_{11} \dots c_{1m_1} & \dots & c_{j1} \dots c_{jm_j} & \dots & c_{n1} \dots c_{nm_n} \end{matrix} \\ \begin{matrix} D_1 \\ \vdots \\ D_i \\ \vdots \\ D_n \end{matrix} & \begin{matrix} c_{11} & c_{12} & \dots & c_{1m_1} \\ \vdots & \vdots & \vdots & \vdots \\ c_{i1} & c_{i2} & \dots & c_{im_i} \\ \vdots & \vdots & \vdots & \vdots \\ c_{n1} & c_{n2} & \dots & c_{nm_n} \end{matrix} \end{matrix} \begin{bmatrix} T_c^{\alpha 11} & \dots & T_c^{\alpha 1j} & \dots & T_c^{\alpha 1n} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ T_c^{\alpha i1} & \dots & T_c^{\alpha ij} & \dots & T_c^{\alpha in} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ T_c^{\alpha n1} & \dots & T_c^{\alpha nj} & \dots & T_c^{\alpha nn} \end{bmatrix}$$

Equations (13)

$$d_{ci}^{11} = \sum_{j=1}^{m_1} t_{cij}^{11} ; i = 1.2. \dots m_1$$

Formation of a rhythmic super-matrix: In this step, by the use of Equation (14), we multiply the matrix T_D^α by the matrix W . In this way, each $t_D^{\alpha ij}$ is multiplied by W_{ij} .

$$W = (T_c^{nor})'$$

Equations (14)

$$T_C^{\alpha 11} = \begin{bmatrix} t_{c11}^{11}/d_{c1}^{11} & \dots & t_{c1j}^{11}/d_{c1}^{11} & \dots & t_{c1m_1}^{11}/d_{c1}^{11} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{ci1}^{11}/d_{ci}^{11} & \dots & t_{cij}^{11}/d_{ci}^{11} & \dots & t_{cim_1}^{11}/d_{ci}^{11} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{cm11}^{11}/d_{cm1}^{11} & \dots & t_{cm1j}^{11}/d_{cm1}^{11} & \dots & t_{cm1m_1}^{11}/d_{cm1}^{11} \end{bmatrix}$$

$$= \begin{bmatrix} t_{c11}^{\alpha 11} & \dots & t_{c1j}^{\alpha 11} & \dots & t_{c1m_1}^{\alpha 11} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{ci1}^{\alpha 11} & \dots & t_{cij}^{\alpha 11} & \dots & t_{cim_1}^{\alpha 11} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ t_{cm11}^{\alpha 11} & \dots & t_{cm1j}^{\alpha 11} & \dots & t_{cm1m_1}^{\alpha 11} \end{bmatrix}$$

Limiting the rhythmic super-matrix: Following Equation (15), bring the rhythmic super-matrix to power (consecutive odd numbers) so that all the numbers in each row converge.

Equation (15)

$$\lim_{Z \rightarrow \infty} (W^{\alpha l})^Z ; \lim_{Z \rightarrow \infty} (W^{\alpha m})^Z ; \lim_{Z \rightarrow \infty} (W^{\alpha u})^Z$$

Research findings

After collecting the pairwise comparison questionnaire, first, the average score of each index was calculated. If the average index score is less than 3, it is removed. The results showed that experts approve all components; the average of all criteria is higher than 3. The results are given in Table 4.

Table (4): Average Scores, Weights and Dimensions and Components Prioritization

Dimensions and Criteria	Code	Average Scores	Final Weight	Rank at the Dimension Level	Rank at the Level of Criteria	Rank at the Total Level
Value Definition	A	4.13	0.18	4		
Determining the goals of the organization based on values	A1	3.92	0.042		1	15
Identify the Key Stakeholders of the Organization	A2	3.76	0.033		4	18
Prioritization of Stakeholders	A3	3.85	0.037		2	16
Identify the Needs of Stakeholders	A4	3.39	0.036		3	17
Determining the Value Propositions	A5	3.31	0.031		5	19
Value Creation	B	4.18	0.270	2		
Identify users of values	B1	3.62	0.051		5	12
Identify sectors or individuals involved in value creation	B2	3.70	0.053		3	9
Determining the purpose of creating values	B3	3.62	0.052		4	11
Determining how to obtain different resources to create values	B4	3.92	0.057		2	6
Explain how to convert resources into a product or service	B5	3.31	0.061		1	5
Value Delivery	C	4.15	0.320	1		
How to present values to stakeholders	C1	3.77	0.074		2	2
Expressing the proportion between the values created and presented to the stakeholders and their costs	C2	3.39	0.067		3	3
Explain the communication channels and how to transfer the created values to the stakeholders	C3	3.39	0.056		4	8
Explaining how to use technology in presenting the created values	C4	3.85	0.077		1	1
Expressing the commitment of the organization in presenting and delivering the created values to the stakeholders	C5	3.77	0.047		5	14
Value Capture	D	4.14	0.230	3		

Dimensions and Criteria	Code	Average Scores	Final Weight	Rank at the Dimension Level	Rank at the Level of Criteria	Rank at the Total Level
Determining the conquerors of values	D1	3.62	0.049		4	13
Express how to capture the created values	D2	3.77	0.053		3	10
Describe how the organization deals with the rest of the values created	D3	3.97	0.068		1	4
Explain how the surplus of created values is shared	D4	3.39	0.056		2	7

Calculating the intensity and direction of impact

Table 3 shows the pattern of causal relationships of the T_C matrix. The expression $\tilde{D}_i + \tilde{R}_i$ indicates the power of impact and effectiveness, and the expression $\tilde{D}_i - \tilde{R}_i$ indicates influence or influence.

Table 3: The pattern of causal relationships of the T_C matrix

	R_i	D_i	$(R_i)^{\text{defuzzy}}$	$(D_i)^{\text{defuzzy}}$	$D_i + R_i$	$D_i - R_i$
A	(0.16,0.37,1.18)	(0.06,0.23,0.88)	0.874	0.391	0.965	0.183
A1	(0.15,0.39,1.29)	(0.15,0.41,1.35)	0.609	0.637	1.246	-0.028
A2	(0.17,0.41,1.33)	(0.14,0.37,1.24)	0.635	0.581	1.216	0.054
A3	(0.10,0.24,1.25)	(0.15,0.39,1.31)	0.561	0.616	1.177	-0.056
A4	(0.17,0.43,1.32)	(0.13,0.36,1.26)	0.641	0.583	1.224	0.058
A5	0.13,0.34,1.17)	(0.15,0.38,1.21)	0.548	0.577	1.125	-0.029
B	0.09,0.28,0.96)	(0.12,0.33,1.08)	0.441	0.510	0.950	-0.068
B1	0.20,0.46,1.42)	(0.11,0.33,1.19)	0.693	0.541	1.234	0.153
B2	(0.15,0.40,1.33)	(0.15,0.37,1.22)	0.625	0.581	1.206	0.044
B3	0.22,0.50,1.46)	(0.10,0.32,1.19)	0.725	0.537	1.262	0.188
B4	0.02,0.18,0.92)	(0.15,0.39,1.31)	0.374	0.616	0.990	-0.243
B5	0.08,0.28,1.12)	(0.17,0.42,1.33)	0.494	0.636	1.130	-0.142
C	0.09,0.28,0.97)	(0.12,0.33,1.08)	0.444	0.510	0.954	-0.065
C1	(0.14,0.37,1.23)	(0.17,0.33,1.28)	0.578	0.617	1.195	-0.038
C2	0.17,0.41,0.29)	(0.11,0.33,1.21)	0.623	0.551	1.174	-0.073
C3	(0.09,0.31,1.15)	(0.18,0.42,1.28)	0.516	0.626	1.414	-0.110
C4	0.09,0.31,0.18)	(0.21,0.47,1.44)	0.527	0.703	1.230	-0.176
C5	0.23,0.51,1.50)	(0.07,0.28,1.14)	0.745	0.494	1.239	0.251
D	(0.09,0.27,0.99)	(0.12,0.32,1.06)	0.499	0.499	0.948	-0.050
D1	0.13,0.32,1.06)	(0.06,0.22,0.87)	0.504	0.381	0.885	0.122
D2	0.09,0.27,0.99)	(0.11,0.29,1.02)	0.448	0.474	0.922	-0.025
D3	0.13,0.32,1.04)	(0.13,0.33,1.09)	0.497	0.518	1.015	-0.021
D4	0.09,0.27,0.96)	(0.13,0.33,1.08)	0.435	0.511	0.945	-0.076

As it can be seen, the value definition dimension has a more significant impact, and the value presentation dimension has the highest impact. In the value definition, the components of “Identifying the needs of stakeholders” and “Determining the key stakeholders of the organization” as the cause variable and the components of “Determining the goals of the organization based on values”, “Prioritization of stakeholders” and “Determining the Value Propositions” have been identified as a disability variable, with the component “Determining the needs of stakeholders” with an impact rate of 1.224 and the component “Prioritization of stakeholders” with an impact rate of 1.177 have had the most significant effect. In the value creation dimension, the components of “Identify users of values”, “Identify sectors or individuals involved in value creation”, and “Determining the purpose of creating values” as the cause and component variables of “Determining how to obtain different resources to create values” and “Explain how to convert resources into a product or service” are identified as the disabled variable that the component of “Determining the purpose of creating values” with an impact rate of 1.262 and the component of “Explain how to convert resources into a product or service” with an impact rate of 1.130 has had the most significant impact. Also, in the value delivery dimension, the component of “Expressing the proportion between the values created and presented to the stakeholders and their costs” and “Explain the communication channels and how to transfer the created values to the stakeholders” as a variable of cause and components “How to present values to stakeholders”, “Explain the communication channels and how to transfer the created values to the stakeholders” and “Explaining how to use technology in presenting the created values” were identified as a disabled variable, the component of “Expressing the proportion between the values created and presented to the stakeholders and their costs” with an impact rate of 1.174 and the component “Explaining how to use technology in presenting the created values” with the effectiveness of 1.230 has had the greatest effect.

Finally, in the capture value dimension, the component of “Determining the conquerors of values” was identified as the cause variable with an effect rate of 0.885, and the components of “Express how to capture the created values”, “Describe how the organization deals with the rest of the values created” and “Explain how the surplus of created values is shared” are the variables that are the component of “Describe how the organization deals with the rest of the values created” with an impact rate of 1.015. It has the most significant effect. According to Table 4, the representation of cause and effect relationships of dimensions and components is in Figures 1 and 2.

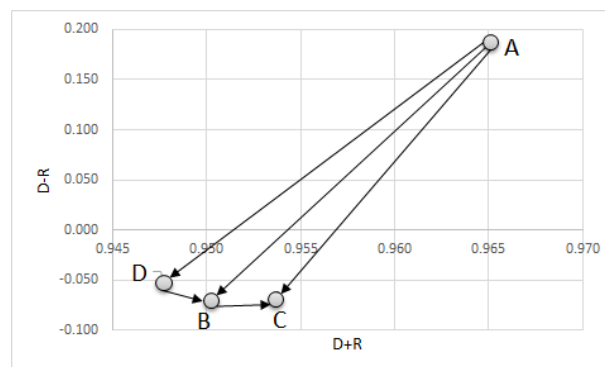


Figure 1: Causal diagram of the main criteria

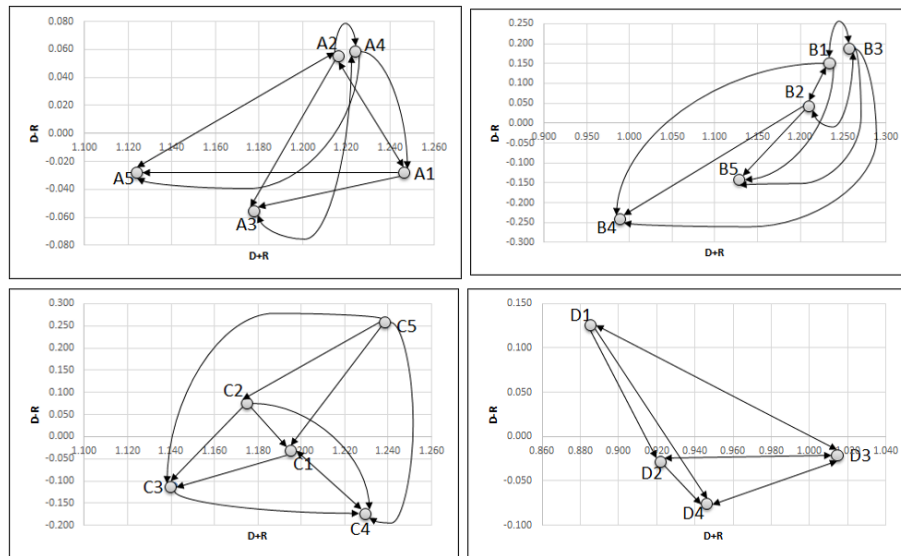


Figure 2: Diagram of the components

Extracting weights and prioritizing dimensions and components

Now that the susceptibility and effectiveness of the dimensions and features have been determined, in the next step, we use Equation (10) to convert the weights extracted from the finite super-matrix into a definite number. The weight of the main criterion is also obtained from the sum of the weights of its sub-criteria. The results are given in Table 4.

According to Table 4, among the main criteria, value delivery with a weight of 0.32 is ranked first, value creation with a weight of 0.27 is ranked second, value capture with a weight of 0.23 is ranked third, and value definition with a weight of 0.18 is ranked fourth. In the ranking of components based on the final weight, the component "Explaining how to use technology in presenting the created values" ranked first, and the component "How to present values to stakeholders" ranked second among 19 components. Also, the component of "determining the proposed values" had the lowest rank among the components.

Conclusion

Most CEOs face the same challenge in their businesses: How can an organization's position be transformed into long-term success in today's turbulent situation? To succeed in an era where the unexpected has become commonplace, organizations must continually review their systems, processes, and strategies. Managers must constantly rethink their business models (Abrahamsson et al., 2019). So far, there is no consensus on the definition and structures of the business model (Chesbrough, 2010; Timmers, 1998; Magreta, 2002). Therefore, defining a business model is an important challenge that business professionals face. The main reason for this can be seen in the differences in the views of businesses, which will lead to different definitions of the business model. One of the solutions offered to solve this problem is to use the concept and idea of ontology.

Osterwalder & Pigneur (2002) argue that ontology essentially leads to a common understanding by defining elements and their relationship in any particular field or realm. Considering the internal and external environmental changes and their impact on the role of accounting and management accountants as consultants and business partners in organizations, the Chartered Global Management Accountant (CGMA) follows the published report of the Chartered Institute of Management Accountants (CIMA) (2016) as a rethinking of the business model, have proposed a value-based business model. The proposed business model has four main dimensions, including value definition, value creation, value delivery, and value capture, which are recommended to management accountants to answer the fundamental questions in each section and thus the path to the organisation's long-term success. Smooth. The present study also examined the proposed business model with a fuzzy approach and using the DNAP method (DEMATEL combination and network analysis process) to answer two basic research questions. In the study of cause and effect relationships of the main dimensions, the value definition dimension of the most influential factor was identified. Using this definition, the organization can identify all its stakeholders, identify their needs, and look for logical solutions to meet their needs. Also, other dimensions of value creation, value delivery and value capture are affected and influenced by other factors. The results show that the dimensions' degree of effectiveness and affectivity have almost the same power. In defining value, "Identify the Needs of Stakeholders" and "Determining the Goals of the Organization based on Values" were identified as the most effective and influential components, respectively. The components of "Determining the Purpose of Creating Value" and "Explaining how to convert resources into a product or service" are the most effective and influential in the value creation section. The only effective component in the value delivery section is "Expressing the commitment of the organization in presenting and delivering the created values to the stakeholders". The component of "Determining the Conquerors of Values" in the section of value conquest on other influential factors and the most influential has the component of "Explaining how the organization deals and acts with the rest of the created values". Based on the ranking, it was found that among the main dimensions, the dimensions of "Value Delivery" and "Value Definition" are at the highest and lowest levels of importance, respectively. In addition, the overall evaluation found that the "Explaining how to use technology in presenting the created values" in the dimension of Value Delivery and the criterion of "Determining the Value Propositions" in the dimension of "Value Definition" from the highest and lowest level are important. Considering that in the management accounting literature, complete research, both inside and outside, on the ontology of business models, including the business model of the Chartered Global Management Accountant (CGMA), has not been done, and the present study view is unique, so it is not possible to compare the results with previous research.

Limitations and research suggestions

General limitations in conducting this research can be the uncertain nature of data, perceptions, attitudes, and lack of access to experts who have the necessary knowledge and skills in management accounting and pointed out the concept of business model and the limited horizons of accounting experts. In addition, characteristics such as time consumption, more energy expenditure, and appropriate mental and psychological conditions to answer the pairwise comparison questionnaire may not have been provided

by some experts at the time of completing the questionnaire. Therefore, in generalizing the results of the present study, these limitations should be considered.

The most important practical proposal of this research is that the Iranian Management Accounting Association can, given the importance of the concept of business model and the results obtained in this research, expand, promote and Scientific advancement of its specialized forces and development of management accounting knowledge. Due to the lack of research and internal research, more extensive studies should be done in this field. In this regard, suggestions for future research are as follows:

- Comparative comparison of business models of stock exchange companies with the ontology of the business model of the Chartered Global Management Accountant (CGMA)
- Using other network evaluation and analysis methods to investigate the cause and effect relationships of the business model framework of the Chartered Global Management Accountant (CGMA) and a comparative comparison of the results with the results of the present study

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